MPP-1000C Modem
Owner's Manual

INTRODUCTION

Congratulations on your purchase of the MICROBITS MPP-1000C Modem, designed for use with Atari Home Computers. You have wisely chosen a modem incorporating the latest state-of-the-art technology to enhance the use of your Atari Computer. The MPP-1000C is a complete telecommunications package, ready to plug in and use. All you need to use the MPP-1000C is your Atari Computer; other equipment is optional. Installation and operation is simple. The MPP-1000C Modem plugs directly into modular telephone jacks and you can use a regular telephone in conjunction with it.

The included SMART TERMINAL software is designed for easy use. Just plug the SMART TERMINAL cartridge into your computer and you are ready to communicate. The software supports disk drives, cassette recorders, printers, and has full uploading and downloading capabilities. The SMART TERMINAL is completely menu-driven; changing an option is as simple as typing a single key. The SMART TERMINAL also supports X-MODEM protocol which allows you to eliminate normal transmission errors while communicating. The SMART TERMINAL software also has many other options that take advantage of the many features of your Atari Computer.

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CONNECTING THE MPP-1000C MODEM TO THE TELEPHONE LINE

1] Plug one end of telephone cable [included] into the modem jack labeled "TELCO". Plug the other end of the cable into the telephone wall jack.

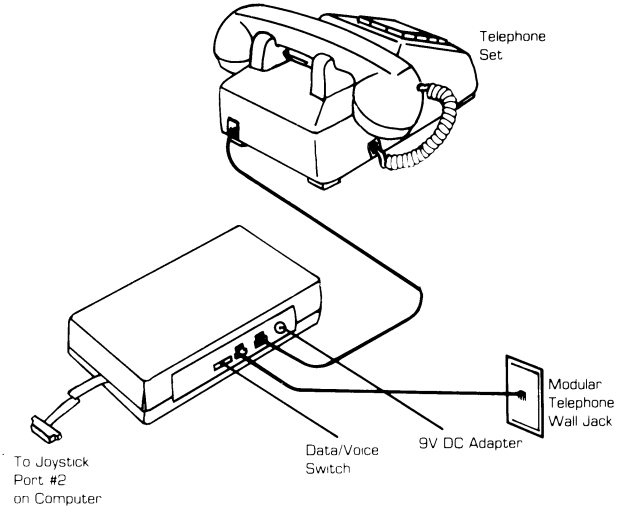
2] Plug your telephone into the modem jack labeled "TELSET" or into another wall jack connected to the same telephone line.

3] Connect AC power adapter [included] to plug labeled "9V DC".

4] Set the DATA/VOICE switch to VOICE.

5] Check installation by lifting the receiver on your telephone. You should hear the dial tone and be able to use the telephone for calling and receiving calls as normal.

6] Connect the flat cable into joystick port #2 on the computer.



LOADING THE SMART TERMINAL

Turn off your computer. Insert the SMART TERMINAL cartridge into the cartridge slot of your computer. [Left slot on Atari 800s]. Make sure the cartridge is firmly in place. If you want to use your disk drive, you should turn it on and install a DOS diskette. Now turn on your computer and the SMART TERMINAL menu should appear on the screen.

***NOTE**: you MUST boot the DOS disk if you want to use your disk drive for saving and loading files.

COMMUNICATING WITH OTHER COMPUTERS

1] Set the communications options needed for the system that you are calling [see SMART TERMINAL MENU for an explanation of these options].

2] Now you can manually dial the other computer or you can have the SMART TERMINAL dial for you.

MANUALLY DIALING TELEPHONE

A] Choose menu option T] TERMINAL MODE.
B] Set DATA/VOICE switch to VOICE.
C] Dial telephone.
D] Listen for the carrier of the other computer [a high pitched tone].
E] When you hear the carrier, set the DATA/VOICE switch to DATA.
F] Place telephone receiver back on the hook. It will not disconnect you.

USING AUTODIAL

A] Set DATA/VOICE switch to DATA.
B] Select menu option M] DIAL/ANSWER FUNCTIONS.
C] Follow directions for dialing a number [See SMART TERMINAL MENU instructions].

3] You are now communicating. To end a terminal session, you may either switch the DATA/VOICE switch back to VOICE or choose ANSWER/DIAL function F] HANG UP PHONE.

NOTE: These are only the general steps for communicating with other computers. Refer to the SMART TERMINAL instructions and Appendix B for information.

THE SMART TERMINAL MENU

The SMART TERMINAL menu should appear as this:

MICROBITS PERIPHERAL PRODUCTS, INC.
SMART TERMINAL REV x.x [c] 1983

A] DISK DIRECTORY
B] MODEM 〈—〉 DISK DIRECT
C] COPY BUFFER TO DEVICE
D] DELETE ALL BUFFERS
E] CREATE NEW BUFFER
F] FULL/HALF DUPLEX
H] ASCII/ATASCII
I] NO/X-MODEM PROTOCOL
J] 38/40/80 COLUMN
K] MODEM 〈—〉 PRINTER DIRECT
L] LOAD BUFFER FROM DEVICE
M] DIAL/ANSWER FUNCTIONS
P] NO/ODD/EVEN PARITY
T] TERMINAL MODE
V] VARIABLE BAUD RATE

xxxx BYTES USED xxxx BYTES LEFT
x BUFFERS USED

CHOICE?

On options F, H, I, J and P the currently selected mode is highlighted in inverse characters. To select an option, simply type the character of the menu option you want.

The SMART TERMINAL can store information that it receives and sends in your Atari's RAM memory. The area that this information is stored in is called a buffer and the size of your memory buffer depends on the amount of RAM memory you have in your computer. You can tell how much buffer space you have used and how much is left from the BYTES USED and BYTES LEFT message on the SMART TERMINAL MENU screen. One character takes one byte of storage; therefore, if you have 1000 BYTES LEFT you can store 1000 more characters in the buffer. See option "E] CREATE NEW BUFFERS" for more information on the SMART TERMINAL buffers.

YOU MUST BOOT A DOS DISKETTE TO USE THE SMART TERMINAL'S DISK FUNCTIONS.

A] DISK DIRECTORY

This command will display the directory of drive #1 if you are using a disk drive.

B] MODEM 〈—〉 DISK DIRECT

If you are using a disk drive this option allows you to transfer files directly between your disk drive and the modem without using a memory buffer. This option is useful for transferring files larger than your computer's memory and for transferring many files in one terminal session.

When this is selected, the computer displays two more options:

1] MODEM → DISK DIRECT
2] DISK → MODEM DIRECT

Option 1 allows you to store incoming data directly to the disk and Option 2 allows you to directly send a disk file over the modem. Both options will prompt you for FILENAME?. Enter 'D:filename.ext' for the appropriate disk file to send or receive. The SMART TERMINAL now goes to TERMINAL MODE and the 〈 OPTION 〉 key will start your file transfer. To abort sending a file before it is finished, or to quit saving data to your disk, simply hit the 〈 OPTION 〉 key again. You can toggle the 〈 OPTION 〉 key again to tranfer more data. The background screen color will change to green when transferring file data and return to black when finished. Press the 〈 START 〉 key to return to the menu.

C] COPY BUFFER TO DEVICE

This option copies the contents of a memory buffer to a device. Legal devices are:

C:[SHORT]	-CASSETTE
D:filename	-DISK
M:	-MODEM
S:	-SCREEN
P:	-PRINTER

The program will prompt for FILENAME?. Enter the filename of the device to which you want to copy. The SMART TERMINAL now asks you which buffer you wish to copy. Enter the buffer number you want to copy [it automatically copies buffer #1 if there is ony one buffer created].

The copy will be performed immediately to all devices except the modem. If you specify 'M:' to copy to the modem, the SMART TERMINAL will go into TERMINAL MODE and the copy [uploading] can be started by pressing the 〈 OPTION 〉 key. The screen color will change to green until the buffer is copied. If you want to abort the copy before it is finished, hit the 〈 OPTION 〉 key again.

Specifying C:SHORT tells the computer to use short inter-record gaps [IRGs] when saving to the tape. Refer to Appendix A for examples of this option.

D] DELETE ALL BUFFERS

This option will delete the contents of all buffers. The computer will ask you to verify that you really want to do this. Type a 'Y' to delete the buffers, any other key will return you to the menu without deleting the buffers. After deleting all buffers, the SMART TERMINAL will have one buffer with a length of 0 BYTES.

E] CREATE NEW BUFFER

The SMART TERMINAL will automatically append saved data to the end of your last buffer. To separate programs or data in memory you should create a new buffer before saving data. When you want to recall that data, you will simply type the buffer number to which it was saved. You are allowed up to nine buffers, and once you create a new one, you cannot save data to an old buffer. All data that is saved to a buffer is appended to the end of your last buffer.

F] FULL/HALF DUPLEX

This option lets you select between full and half duplex. The duplex that you need to use is determined by the computer with which you are communicating. In full duplex mode, each character you type is sent to the other computer, echoed back to your computer, and then displayed on your screen. In half duplex mode, your computer sends and displays each character as you type. You can tell if you are in the wrong duplex if:

- You type a character and nothing appears on your screen.
- You type a character and two of the same characters are displayed.

You should be able to solve either of these by simply changing duplex modes.

H] ASCII/ATASCII

This option tells the SMART TERMINAL how to translate the characters it sends and receives. In ASCII mode, the SMART TERMINAL translates everything it sends from ATASCII [Atari ASCII] to standard ASCII and everything it receives from ASCII to ATASCII. You should be in this mode when communicating with any computer other than an Atari. The following codes are converted in this mode:

ASCII	ATASCII	FUNCTION
13	155	Carriage Return
12	125	Screen Clear
7	253	Bell
8	126	Backspace

Any other ASCII code that does not have a direct Atari translation will not be printed.

In ATASCII mode no translation takes place. This mode is useful when communicating with another Atari that also is not translating. The SMART TERMINAL will print any character that it receives in this mode. Sometimes when you first go to TERMINAL MODE, hearts will be printed on the screen. This is because the modem sends the SMART TERMINAL O's when it hasn't yet detected the other computer's carrier [an ATASCII 'O' is a heart].

I] NO/X-MODEM PROTOCOL

X-MODEM protocol allows transferring files with no transmission errors. Many Atari bulletin boards will let you use X-MODEM when uploading and downloading programs and data files. You can also use this when talking to another Atari, if their terminal program also supports X-MODEM protocol.

X-MODEM automatically corrects any transmission errors that occur because of a bad connection, random phone noise, etc. This is the way it works: The computer that is sending the file sends a 128 byte [character] block of data. As it sends each character, it adds that character's value to a one byte checksum. After the computer has sent all 128 bytes, it sends the checksum value. The receiving computer also checksums the incoming data and then compares its value to what the other computer sent it. If both checksums are the same, the receiving computer sends a code saying the transmission was okay and to send the next block of data. If the checksums were not the same, the computer sends back a code telling the other computer to retransmit the last block. It will keep retransmitting the block until it gets one with no errors. The computer transmitting the file also sends

a code to tell the receiving computer when the entire file has been transmitted.

To download [receive] a file using X-MODEM, you should select this option, create a new buffer if necessary, and then go to terminal mode. When the other computer is ready to send the file, hit the 〈 OPTION 〉 key. The file will automatically be sent. To upload [send] a file, you must chose the X-MODEM protocol and then choose C] COPY BUFFER TO DEVICE or B] MODEM 〈 — 〉 DISK DIRECT. If you chose C] COPY BUFFER TO DEVICE you now should respond to the prompt with 'M:' to copy to the modem. You tell it which buffer to send and the SMART TERMINAL goes directly into TERMINAL MODE. If you want to send a disk file directly, you should chose 2] DISK 〈 — 〉 MODEM DIRECT. Type the name of the file you want to send and then the SMART TERMINAL will go directly to TERMINAL MODE. When the other computer is ready to send the file, you hit 〈 OPTION 〉 to start sending the file. You can also abort an upload or download by pressing the 〈 OPTION 〉 key again. Note- If you abort a download, the SMART TERMINAL will not save any of the data it received. Press the 〈 START 〉 key to return to menu.

You must be careful to have X-MODEM selected only when downloading files that the other computer is sending with X-MODEM protocol. If you try to save a message or instructions while in this mode, the SMART TERMINAL will not save anything because the data was not transmitted using X-MODEM.

J] 38/40/80 COLUMN

This option changes the number of characters displayed on the screen. The default setting is 38 columns because many televisions have overscan and do not display the full screen. If you have a monitor, or your television doesn't overscan, you should use the 40 column mode because many documents are formatted for this screen width. To use the 80 column mode you must have a BIT-3 80 COLUMN BOARD installed in your computer. If you do not have an 80 column board, the SMART TERMINAL will not allow you to select this option.

K] MODEM 〈 — 〉 PRINTER DIRECT

This option allows you to have a copy of the data printed at the same time it is displayed on the screen. When you choose this option, the SMART TERMINAL goes immediately into TERMINAL MODE. To start printing what you are receiving, press the 〈 OPTION 〉 key. To stop printing, you simply press the 〈 OPTION 〉 key again. You can

use this feature as many times as you want in a terminal session, but if you go back to the SMART TERMINAL MENU, you must reselect this option. The SMART TERMINAL cannot save data to a buffer while in the direct printer mode. If you also want to save the data on tape or disk, you should save it to a buffer first and print it later.

To use the direct print option, your printer must have an average throughput of at least 30 characters per second. If your printer will not print this fast, the SMART TERMINAL's 255 byte input buffer will overflow and data will be lost. Another problem that is inherent with some versions of the Atari operating system [OS] is that the computer will sometimes freeze up while printing and you need to press ⟨ BREAK ⟩ to continue.

*NOTE: Do not have X-MODEM protocol selected when using direct printer.

L] LOAD BUFFER FROM DEVICE

This option allows you to load information from a device into a memory buffer. When you chose this option, the SMART TERMINAL will ask you which device to load from. Legal devices are:

C:[SHORT]	-CASSETTE
D:filename	-DISK
E:	-SCREEN EDITOR

If you specify the filename C:SHORT the SMART TERMINAL will use short inter-record gaps [IRGs] when loading from the tape. Refer to Appendix A for more information on this option.

The editor built into the SMART TERMINAL is very limited but will allow you to prepare messages and text while off-line to send later. To use the editor type 'E:' when prompted for filename, the screen will be cleared and you can start typing. You can type up to 3 lines of text [120 characters] into the editor's buffer at a time and you can edit this text using the normal Atari editing features. Before you type in more, you must press ⟨ RETURN ⟩ to save the text from the edit buffer to the SMART TERMINAL's buffers. Once you type ⟨ RETURN ⟩, you cannot go back and edit what you typed. The SMART TERMINAL will print a line across the screen to remind you that you cannot edit those lines. The editor is now ready to accept more text. Pressing the ⟨ START ⟩ key and ⟨ BREAK ⟩ will return you to the SMART TERMINAL MENU. Be sure that you have entered the last line before you do this or it will not be saved to the buffer.

M] DIAL/ANSWER FUNCTIONS

When you select this mode, the SMART TERMINAL will display another menu of functions and a list of telephone numbers [that you define].

The screen should look like this:

0]
1]
2]
3]
4]
5]
6]
7]
8]
9]

A] AUTOANSWER [OFF] or [ON]
B] DIAL NUMBER
C] CHANGE NUMBER
D] LOAD NUMBERS
E] SAVE NUMBERS
F] HANG UP PHONE
G] EXIT

CHOICE?

You may now choose options A-G by typing that character.

A] AUTOANSWER

Typing an 'A' will toggle the autoanswer flag on and off. If the autoanswer flag is on when you go to TERMINAL MODE, the computer will wait for the phone to ring and then automatically answer it. Note that you can select any of the upload/download functions and have them automatically executed when the phone rings. This is useful for sending and receiving files when you are not home or at night when telephone charges are lower.

To automatically send a file to someone calling, you should first set AUTOANSWER ON. Now you can load the file into one of your memory buffers and select C] COPY BUFFER to MODEM or you may select the direct disk option to send the file. Both of these options will put you directly into TERMINAL MODE. Press the [OPTION] key and the computer will say 'SAVE ON'. This means that the SMART TERMINAL is now ready to accept calls. When another computer calls the MPP-1000C and sends any character, the SMART TERMINAL will begin sending the file. When another computer calls, the same file will automatically be sent again. You can return to the menu by pressing the [START] key.

To automatically receive a file, you can choose the DIRECT DISK, DIRECT PRINTER, or buffer save options. For saving the data directly to the disk or printer, select that option and when it goes to TERMINAL MODE press the [OPTION] key. To save to your memory buffer, go directly to TERMINAL mode and press the [OPTION] key. The computer will print 'SAVE ON' and is ready to accept calls. When a computer calls, the SMART TERMINAL will automatically answer and any data that is sent will be printed or saved. the SMART TERMINAL can accept more than one call and will append that data to the end of previous calls. You exit this mode by pressing the [START] key.

B] DIAL NUMBER

This option automatically dials a telephone number that you define and then returns to the SMART TERMINAL MENU. From there you should choose any of the options you need and then go to TERMINAL MODE. You can return to the SMART TERMINAL MENU by pressing the [START] key.

When you select the DIAL NUMBER option, the computer will ask you for the number to dial. Type a '0'-'9' to dial that predefined number. See option C] CHANGE NUMBER about defining the numbers to dial.

C] CHANGE NUMBER

This option lets you change the telephone numbers that are defined at the top of the screen. To change a number, select this option and when it asks for the NUMBER? to change, type a '0'-'9'. The computer will then ask for the new number. You can now type in up to 24 characters for the phone number and a description of what that number is. DO NOT include any numbers in the description. Type [RETURN] when you are done and it will be displayed on the screen. The following are examples of correct entries:

0 1[503]967-9075 MICROBITS
1 ACE BBS 1-503-343-4352
2 123-4567 FRED'S HOUSE

Do not have an entry like the following:

1-503-967-9075 NUMBER 1

If you have a number like this, the computer will also dial the '1' and you will get a wrong number.

D] LOAD NUMBERS

This option allows you to load your telephone numbers from cassette or disk. You must load files that were created with the E] SAVE NUMBERS option.

When you select this option, the SMART TERMINAL determines if you are using a disk drive. If you are, it will attempt to load the file 'MPP.DAT' into your telephone number directory. If that file is not on your disk, nothing will be loaded. If you are not using a disk drive, the SMART TERMINAL will automatically try to load from cassette. Insert the tape with the telephone numbers into the tape player and press [PLAY]. When the computer beeps, press any key and it will load the tape.

The SMART TERMINAL automatically tries to load the telephone numbers from disk every time that you boot the cartridge or press [SYSTEM RESET]. If you do not have a telephone number file on your disk, the computer will not load anything but will not give an error message.

E] SAVE NUMBERS

This option saves the telephone numbers that you have defined. When this option is selected, the SMART TERMINAL automatically determines if you are using a cassette or disk drive. If you are using a disk, the numbers will be stored on the disk in a file named 'MPP.DAT'. If you are using the cassette, the computer will beep twice. You should insert a blank tape into the recorder and press the [PLAY] and [RECORD] buttons. Now press any key on the computer and your telephone numbers will be saved to the tape.

F] HANG UP PHONE

This option tells the modem to hang up the phone if you are connected with another computer. You can use this to hang up in the manual dial, autodial, and autoanswer modes.

G] EXIT

This option returns you to the SMART TERMINAL MENU.

P] NO/ODD/EVEN PARITY

This option allows you to select the parity that the SMART TERMINAL uses when communicating with the other computer. The parity you need will depend on the computer you are talking to. Most computers require NO PARITY but if you get a message from the other computer saying 'PARITY ERROR' you will need to change the parity.

T] TERMINAL MODE

TERMINAL MODE is used to actually communicate with the other computer. The SMART TERMINAL will print **** ONLINE to show that you are in TERMINAL MODE and now any characters you type on the keyboard are sent over the modem. You can return to the SMART TERMINAL MENU by pressing the 〈 START 〉 key.

If you chose B] MODEM 〈 — 〉 DISK DIRECT, C] COPY BUFFER TO MODEM, or K] DIRECT PRINTER you can start those functions by pressing the 〈 OPTION 〉 key. If none of these options were selected, pressing the 〈 OPTION 〉 key will start saving incoming data to your buffer. You stop saving data by pressing the 〈 OPTION key again. You can use the buffer save as many times as you want, but to separate programs or data you should go back to the SMART TERMINAL MENU and create a new buffer.

When you are copying to or from a buffer, the background screen color will change to green. When the transfer is finished, the screen will return to black. The screen will change to red approximately 700 characters before buffer space is full. When your buffer space is completely full, the screen color returns to black and the computer beeps once.

V] VARIABLE BAUD RATE

The MPP-1000C is built to operate at a standard 300 baud, but some computers may communicate at a different baud rate [ie. 110 baud]. Using this option, you can change the baud rate anywhere from 100 baud to an upper limit around 450 baud. You will likely start getting transmission errors at the higher baud rates.

TECHNICAL SPECIFICATIONS

The MPP-1000C MODEM is a 300 baud [bps], Bell 103 compatible, frequency shift-keyed modulator-demodulator. The MPP-1000C is registered by the Federal Communications Commission under part 68 for direct connection to the telephone network. The MPP-1000C simultaneously sends and receives serial data, automatically switching to Originate or Answer mode as the need arises.

TELEPHONE COMPANY NOTIFICATION

Before connecting the MPP-1000C MODEM to the telephone network, you must provide your local telephone company with the following:

*Your telephone number
*The modem FCC Registration Number: B4V8N2-70317-DM-R
*The Ringer Equivalence Number: 0.1B
*The USOC Jack required: RJ11

You can also find this information on the bottom of the modem.

APPENDIX A

ATARI FILE TYPES

The Atari computer recognizes three basic file types on cassette and disk. Games that you buy, programs you write, business software, systems software, etc., will all fit into one of the three categories. You need to be able to recognize these different types of files to upload and download software and use the other features of the SMART TERMINAL correctly.

BINARY FILES

The first file type is a binary [machine language] file. Most system software [DOS, disk duplicators, etc.], and a lot of games and applications software [word processors, compilers, etc.] are binary files and usually do not require a cartridge in your computer to use. Binary files on disk will usually load by themselves or you will load them using DOS option L] LOAD BINARY FILE. You do not need to do anything special to load or save disk binary files with the SMART TERMINAL because DOS handles them the same as other files. Binary files on tape will usually be loaded by pressing the 〈 START 〉 button while turning on the computer. When the computer beeps, you type 〈 RETURN 〉 to start loading the tape and it will automatically run when it is loaded. When saving a binary file to cassette with the SMART TERMINAL, you need to be sure to specify C:SHORT for the filename. The 'SHORT' tells the SMART TERMINAL to use short inter-record gaps [IRGs]. Short IRG tapes are distinguishable by the short delay between the beeps the computer makes while loading the file. Short IRGs are about ½ second in duration as opposed to about 5 seconds for long IRGs. You must be sure to specify the C:SHORT option when saving and loading binary files.

*NOTE - not all tapes saved with short IRGs are binary files. See BASIC LOAD FILES for more information.

BASIC LOAD FILES

BASIC load files are like binary files but they are BASIC programs. When you type a program into your computer using BASIC, the common commands such as PRINT, REM, FOR, NEXT, etc. are condensed into a one character "token" to save memory space. If you were to look at a BASIC program as it is stored internally, it would not make sense. BASIC takes care of this by converting the tokens back to normal words when you list your program to the screen. When you use the BASIC commands CSAVE and SAVE"D:filename", the program is saved out in this token format. These BASIC load files usually load faster and are shorter than a comparable BASIC list file [see BASIC LIST FILES]. You load the file back into BASIC by using the CLOAD and LOAD"D:filename" commands. Cassette load files are stored using short IRGs [see BINARY FILES] so you need to specify C:SHORT for the filename when saving and loading these files with the SMART TERMINAL. BASIC programs can also be saved in the LIST [see LIST FILES] format.

LIST [TEXT] FILES

List files are files that contain information in text form. A list file is anything that is not a BINARY or BASIC LOAD file and could be word processor text, instructions you download from a bulletin board, a message to a friend, etc. A list file may also be a BASIC program saved with the LIST "C:" or LIST "D:filename" command. When you save a program with the LIST command, BASIC converts its internal tokens back to the original commands so the saved program looks the same as it does when you LIST it to the screen. You load a BASIC list file into the computer with the ENTER command; for cassette the command would be ENTER "C:" and for disk it would be ENTER "D:filename". List files on cassette must be saved using long IRG's [specified by only C:] because BASIC has to process each line as it is loaded.

List files are frequently used for downloading programs from bulletin boards because transmission errors are easy to find, but do not assume that all programs are list files. Most bulletin boards will indicate the BASIC load files, and binary programs will usually have special instructions for loading and using. If you have problems downloading a particular file from a bulletin board you should consult the SYSOP [Systems Operator] for help.

APPENDIX B

EXAMPLES OF USING THE SMART TERMINAL

DOWNLOADING FROM AN ATARI BULLETIN BOARD [BBS]

When communicating with another Atari, you should have the following options set: FULL DUPLEX, ATASCII, NO PARITY. Go to TERMINAL MODE and call the other Atari. Go through the necessary steps to get the program ready to download [see the bulletin board's instructions]. Most bulletin boards have you hit the 〈 RETURN 〉 key to start sending the file, but **DON'T** do this yet. Press the 〈 OPTION 〉 key to tell the SMART TERMINAL to start saving and **then** press the 〈 RETURN 〉 key [or whatever key the BBS uses]. Note that the timing is critical here because you do not want to save garbage at the start of your file but you also do not want to miss any data. When the entire file has been sent, press the 〈 OPTION 〉 key again to stop saving data to your buffer. To download another file you should return to the SMART TERMINAL MENU and create a NEW BUFFER and go through the same steps again.

Once you have finished and are logged off the BBS, you should save your buffers. Go to the SMART TERMINAL MENU and chose COPY BUFFER TO DEVICE and the device to which you want to save the file. To get a listing of the program and have it permanently stored, you could save to disk and then repeat the process to the printer.

Saving to a buffer is not the only way that you can download a file. You can also use the DIRECT DISK option to transfer files. To use this option chose B] MODEM 〈 — 〉 DISK DIRECT. Now select 1] MODEM 〈 — 〉 DISK DIRECT and respond with the disk filename to save the file to. The SMART TERMINAL automatically goes to TERMINAL MODE and you can start saving data by pressing the 〈 OPTION 〉 key. Pressing the 〈 OPTION 〉 key again will stop saving data to the disk. When the complete file has been transferred, you must press the 〈 START 〉 key to return to the SMART TERMINAL MENU. Doing this causes the remaining data to be saved and the disk file is closed. Downloading another program is as easy as repeating this process with another filename.

Many Atari bulletin boards offer the choice of using X-MODEM PROTOCOL. If possible, you should always use it because it eliminates transmission errors. Downloading with X-MODEM is basically the same as before but starting and stopping the transfer is easier. You start the transfer by pressing the ⟨ OPTION ⟩ key and it is automatically stopped when the end of the file is received. You can use X-MODEM protocol with the buffer save or with DIRECT DISK.

UPLOADING TO AN ATARI BULLETIN BOARD [BBS]

The first step is to load your file into a buffer. Select option L] LOAD BUFFER FROM DEVICE and respond with the filename you want to send. When the file is loaded go to TERMINAL MODE and establish communications with the BBS. When you have gone through the necessary steps to get the BBS ready to receive your file, you should return to the MENU. Chose option C] COPY BUFFER TO DEVICE and respond with M: for the filename. You will automatically be returned to TERMINAL MODE. To start sending the file, press the ⟨ OPTION ⟩ key. If you return to the SMART TERMINAL MENU the buffer copy is cancelled and you must repeat the COPY BUFFER TO DEVICE process to send another buffer. Note that you can also use X-MODEM protocol and DIRECT DISK when uploading files.

UPLOADING TO ANOTHER ATARI

You should basically follow the same steps as for a bulletin board. The one difference is that both computers should be in HALF DUPLEX.

UPLOADING AND DOWNLOADING WITH THE SOURCE, COMPUSERVE, AND OTHER COMPUTERS

You should be in ASCII mode and set the necessary other options [you should be able to communicate with most computers with the default options set]. When uploading and downloading to a non-Atari, you will probably be transferring text files and **not** programs. Other than this, the basic steps are the same.

SERVICE

If your MPP-1000C MODEM does not work, check the following:

1] Is it plugged into joystick port #2?

2] Do you have the telephone and wall-jack cables plugged in correctly?

3] Is the battery good or is the power adapter plugged in?

If it appears that the MPP-1000C is malfunctioning, you should immediately disconnect it from the phone lines until the source of the problem is discovered. Contact our service department at [503] 967-9075 for repair instructions. Do not return any equipment without instructions from Microbits.

If you are having problems using the MPP-1000C or SMART TERMINAL software, you should ask your local dealer for help. You can call us for asistance if your local dealer cannot answer your questions.

WARRANTY

Microbits Peripheral Products, Inc. warrants the MPP-1000C Modem and included cartridge to be free from defects in material and workmanship and to meet applicable specifications under normal use and service for a period of one [1] year after sale to original owner. If any parts or equipment are deemed to be defective originally, or if these parts or equipment have become defective under normal usage rather than misuse, negligence, or accident, Microbits Peripheral Products, Inc. will repair or replace them without charge. This warranty shall not apply to parts or equipment that have been repaired or altered outside our repair facility. Equipment that has been subjected to misuse, negligence, or accident; or that has been altered, defaced, or has the serial number missing is not covered by this warranty. Repairs that are not covered by this warranty will be billed at current shop charges.

Microbits Peripheral Products, Inc. does not assume any liability for any consequential damages caused by the use of the MPP-1000C modem or included software.

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